HYDROGEN UKRAINE LLC

RENEWABLE POWER-TO-HYDROGEN PRODUCTION

Zakarpattia and Odesa Regions

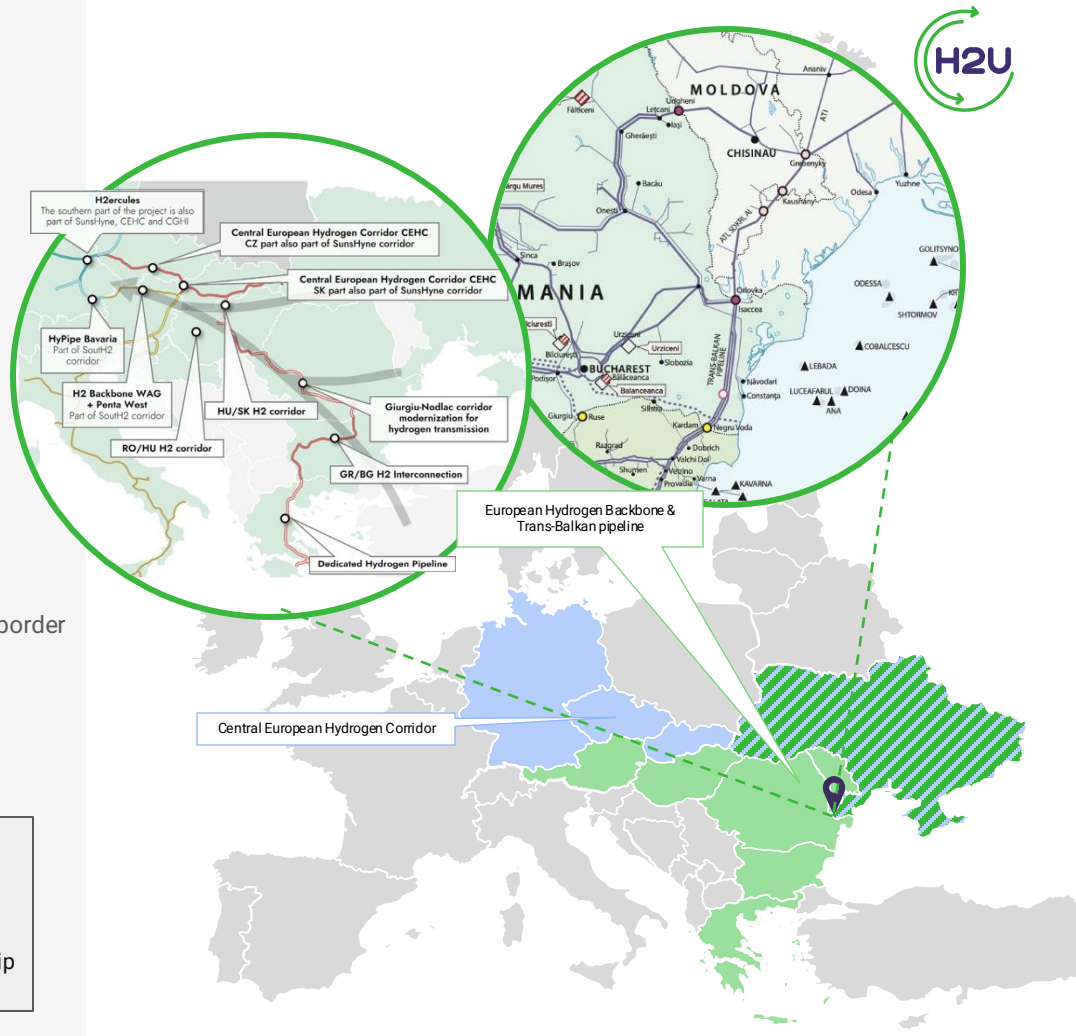
H2U'S RENEWABLE HYDROGEN PROJECT
Reni, Odesa Region

Electrolysis: 100MW
Solar: 120MW
Wind: 80MW

Lead develop	Hydrogen Ukraine, LLC
Location	Reni, Odesa region, Ukraine
Description	Construction of a green hydrogen production plant with a first-phase electrolyzer capacity of 100 MW, in combination with solar (120 MW) and wind (80 MW) generation facilities for internal needs and export to EU countries
Advantages	Abundant water resources, optimal PV and wind power configuration H2 production is strategically located near the EU border

Scalability

100 MW of electrolysis	by 2027
200 MW of electrolysis	by 2029
3,000 MW of electrolysis	by 2035



The 1st Ukrainian hydrogen project
on the Global Hydrogen Valley Platform

CERTIFIED
by the Mission Innovation and Clean Hydrogen Partnership
on May 8, 2023

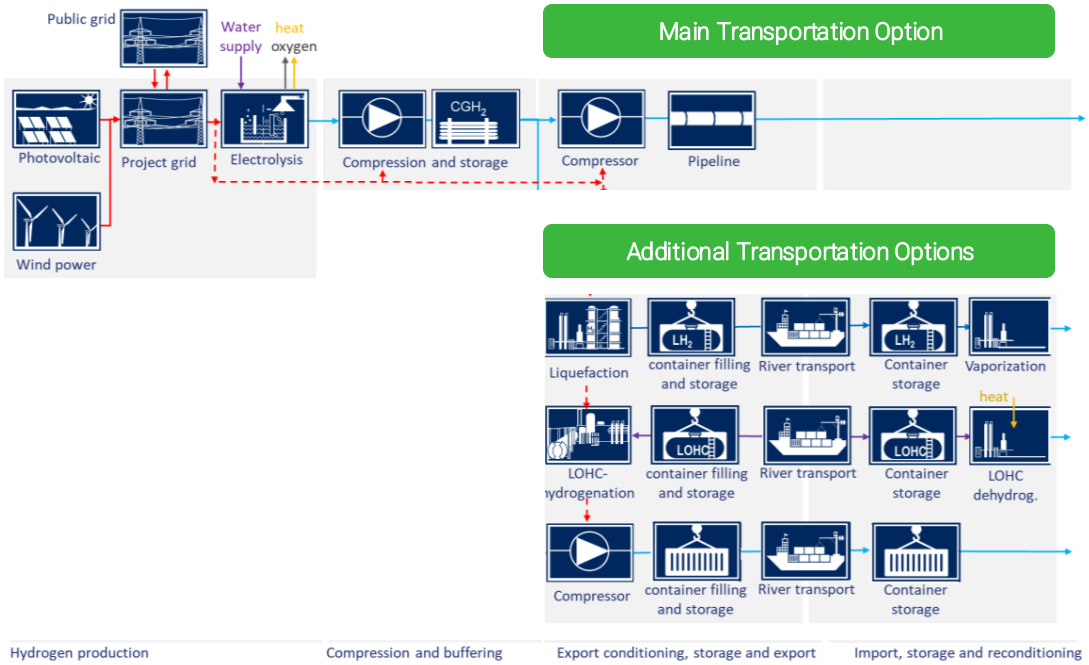
Key Elements of the Hydrogen Production and Export Chain. Completed Studies

Preliminary Feasibility Study: The analysis of the potential for hydrogen production from renewable energy sources was completed at the end of 2021. It established the technical and economic feasibility of the construction of a hydrogen production plant with electrolyzer capacities of 100, 200, and 3000 MW.

Water Supply: The Institute of Geological Sciences of the National Academy of Sciences of Ukraine has confirmed that water intake for electrolysis with a capacity of up to 3000 MW, amounting to 0.2334 m³/s, which is only 0.0036% of the average annual water flow of the Danube River (6400 m³/s), will not impact the river, harm the Danube lakes, or affect local water supply.

Logistics: Options for hydrogen transportation by pipeline, as well as by barge along the Danube using ISO containers for LOHC, liquefied hydrogen, and compressed gaseous hydrogen, have been calculated.

Renewable Energy Facilities: Wind measurement campaign completed in October 2023, informing the ongoing design of a 160 MW wind farm. Average annual energy production per 1 MW installed is about 3,420 MWh, with a load factor of approximately 39% and an overall efficiency of about 92.4%.



Consortium

Supported by UK International Development
Partnership | Progress | Prosperity

Innovate Ukraine – Supporting Ukraine's Energy Recovery
Project number: 10089747

AB5 consulting

UK-registered administrative lead

AB5 Consulting Ltd is an SME based in London, UK. AB5 fosters innovation to empower other organizations to achieve their full potential. With sound competencies in advisory and management activities, AB5 carries out business development studies, systems evaluation, project management and interface, bid organization and management, regulatory support activities. Clients include energy and high-tech companies, satellite operators and international organizations. AB5 develops its own projects too, focusing on innovation, IoT and AI. AB5 is a B Corp certified company.

H2U

Ukrainian partner

Hydrogen Ukraine LLC headquartered in Kyiv, is a leading company pioneering hydrogen-based renewable energy solutions in Ukraine. H2U's mission spans large-scale hydrogen production, establishing an end-to-end supply chain, and decentralizing the country's energy portfolio.

Components of a Comprehensive Feasibility Study

1. Feasibility study of hydrogen production (electrolysis plant)
2. Feasibility study of the construction of WPP and SPP, their integration into the energy system of Ukraine and connection to hydrogen production

Preliminary Situational Plan

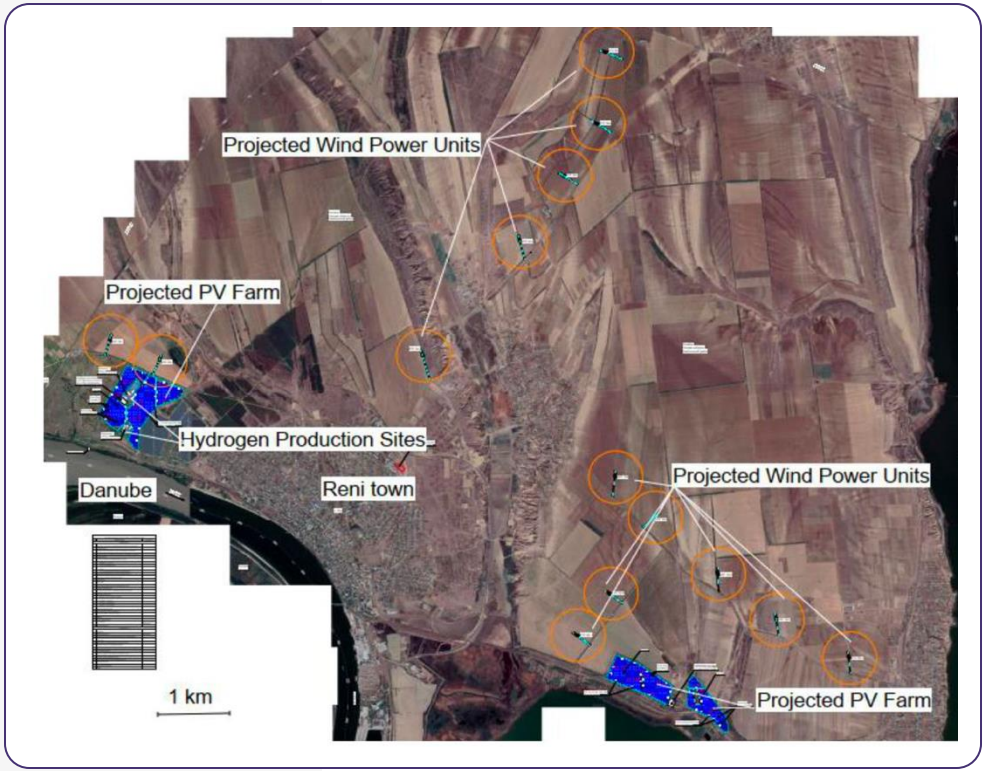
100 MW of electrolysis with scaling up to 200 MW

Solar Power Plant

120 MW with scaling up to 240 MW

Wind Power Plant

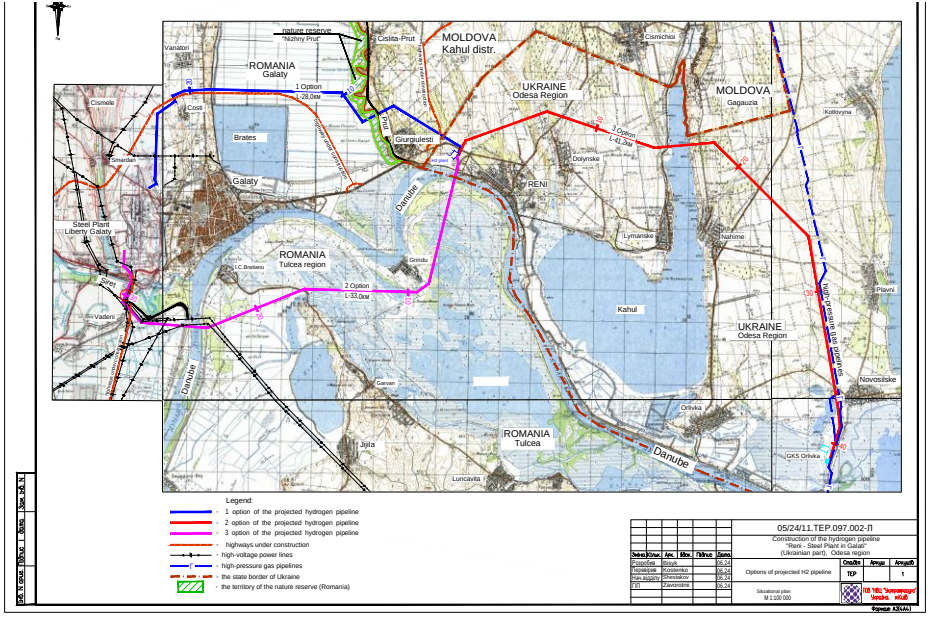
80 MW with scaling up to 160 MW



Components of a Comprehensive Feasibility Study

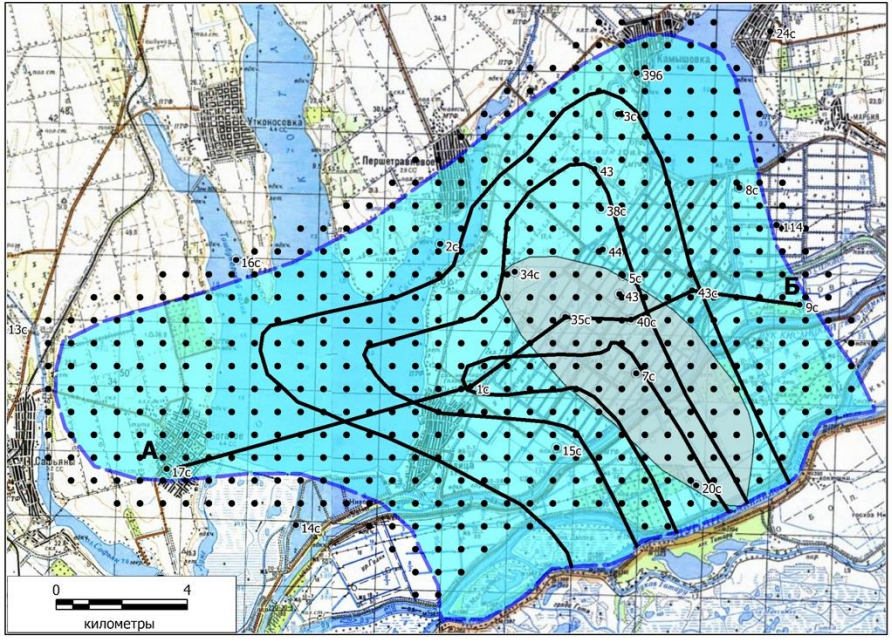
Techno-economic study for hydrogen transmission pipeline Reni-Galati

3 options have been developed for the construction of hydrogen pipeline routes (Ukrainian section, Odesa region):
1st option: from the hydrogen plant in the city of Reni through the territories of Ukraine, Moldova, and Romania to the steel plant in the city of Galati, with a route length of 28 km.
2nd option: from the hydrogen plant in the city of Reni through the territories of Ukraine and Romania to the steel plant in the city of Galati, with a route length of 33 km.
3rd option (main): from the electrolyzer plant in the city of Reni to the compressor station "Orlivka," with a route length of 41.2 km. The route runs through Ukrainian territory up to 26 km, then parallel to the main gas pipeline to the "Orlivka" compressor station.



Geological substantiation of sites for the construction of underground hydrogen storage facilities in saline formations of the Odesa region, Ukraine

As part of the study, the locations with the least permeable zone of the salt deposit will be identified, and the site where underground caverns can be constructed will be determined.

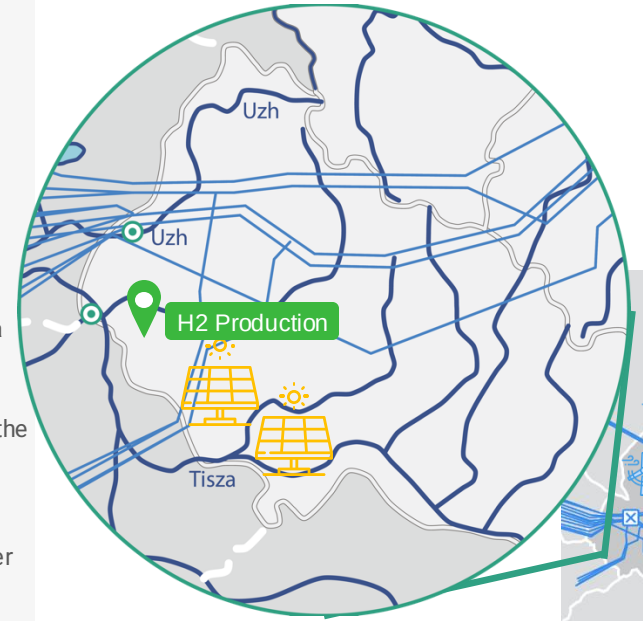


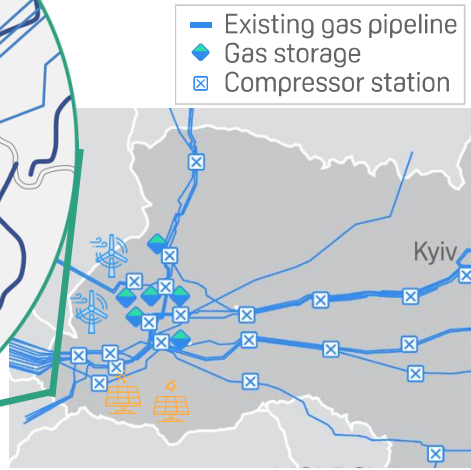
H2U'S RENEWABLE HYDROGEN PROJECT
Zakarpattia

Electrolysis: 100MW
Solar: 120MW

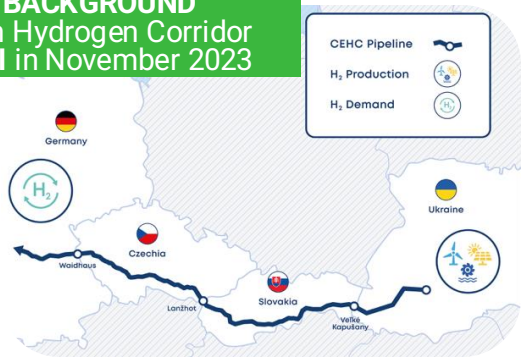
Lead developer	Hydrogen Ukraine, LLC
Location	Uzhhorod District
Description	Construction of a renewable hydrogen production plant with an initial phase electrolyzer capacity of 100 MW
Transportation	By pipeline to the metallurgical plant in Košice, Slovakia
Advantages	Location near EU borders Existing energy infrastructure nearby: - The “SOYUZ” gas pipeline under the operation of the Gas Transmission System Operator of Ukraine - 400 kV and 200 kV power transmission lines
Water Supply	The Institute of Geological Sciences of the National Academy of Sciences of Ukraine has assessed the water resources of Zakarpattia for the development of "green" hydrogen production
Scaling	Up to 1500 MW of electrolyzer capacity Connection to the Central European Hydrogen Corridor
Infrastructure Development	Construction of a hydrogen refuelling station network Connection to the TEN-T Corridor

CERTIFIED
by the Mission Innovation and
Clean Hydrogen Partnership
in November 2023





STRATEGIC BACKGROUND
Central European Hydrogen Corridor
selected as a **PCI** in November 2023



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